Lithoglyptes hirsutus (Cirripedia: Acrothoracica), A New Burrowing Barnacle from Hawaii

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TWO SAMPLES of coral from Kaneohe Bay, Oahu, Hawaii, have each yielded a number of specimens of a new species of acrothoracican burrowing barnacle of the family Lithoglyptidae. Samples of *Psammocora verrilli* Vaughan collected by Stephen A. Wainwright,[2] and of *Porites compressa* Dana collected by Charles Stasek,[3] were referred to me by William A. Newman.[3] These barnacles are the first representatives of the order Acrothoracica known from Hawaii.

FAMILY LITHOGLYPTIDAE Aurivillius 1892

Lithoglyptidae *emend.* Tomlinson and Newman 1960.

Mouth cirri well developed, on a 2-jointed pedicle; 4-5 pairs of terminal cirri, but if only 4 pairs, caudal appendage present; no gut teeth or gizzard in digestive tract; with adhesive disc on mantle; lateral bar absent; burrows in coral or mollusc hard parts.

Lithoglyptes Aurivillius 1892 *(emend.)*

Four pairs of terminal cirri on a 2-jointed pedicle with oblique sutures at first joints; caudal appendage present; mouth cirrus with 2 rami of 3 to 6 articles (5 to 6 in original description).

Lithoglyptes hirsutus n. sp.

DIAGNOSIS: Female (Figs. 1–7): Mantle aperture strongly arched on both sides of an acute projecting tip which is not a movable spine or hook; aperture length exceeds ½ of mantle width, aperture armed with numerous teeth and long flexible hairs, especially on the outer edge of the lip area; anterior and posterior rami of mouth cirri with 5 and 3 articles, respectively; caudal appendage with 2 segments; head with acute projection opposite mouth area; burrow pointed oval in surface view. Holotype 1.2 × 0.67 mm; about 30 dried specimens in *Psammocora verrilli* from a depth of 3-6 ft on Sand Bar Reef and in *Porites compressa* from NE side Checker Reef, Kaneohe Bay, Oahu, Hawaii. The species is named for the presence of numerous hairs on the mantle aperture.

TYPE MATERIAL: Holotype USNM 107544. Paratype material: San Francisco State College, San Francisco, California; California Academy of Sciences, San Francisco, California; Plymouth Laboratory, England; Seto Marine Biological Laboratory, Japan; Portobello Marine Station, New Zealand.

DESCRIPTION: Female: The mantles of 16 adults averaged 1.95 mm in height × 1.18 mm in width (maximum 2.1 mm and 1.6 mm), and are flattened laterally. The mantle is studded with numerous small T-shaped teeth, short spinules, and three- or four-pointed star-shaped teeth, all scattered about on the surface, but particularly near the aperture. The mantle attachment disc adheres strongly to the burrow, but is readily removed if the coral is decalcified.

The average length of the slitlike aperture of 12 specimens is 0.97 mm. Near the anterior end of the aperture two acute projections extend to a point, but are not movable or hooked. The outer edges of the thickened apertural area are heavily set with teeth and long hairs. The inner edges have fewer teeth and hairs, but have a row of comblike projections which extend into the aperture and tend to occlude it. This structure has been called the "comb-collar" by previous workers.

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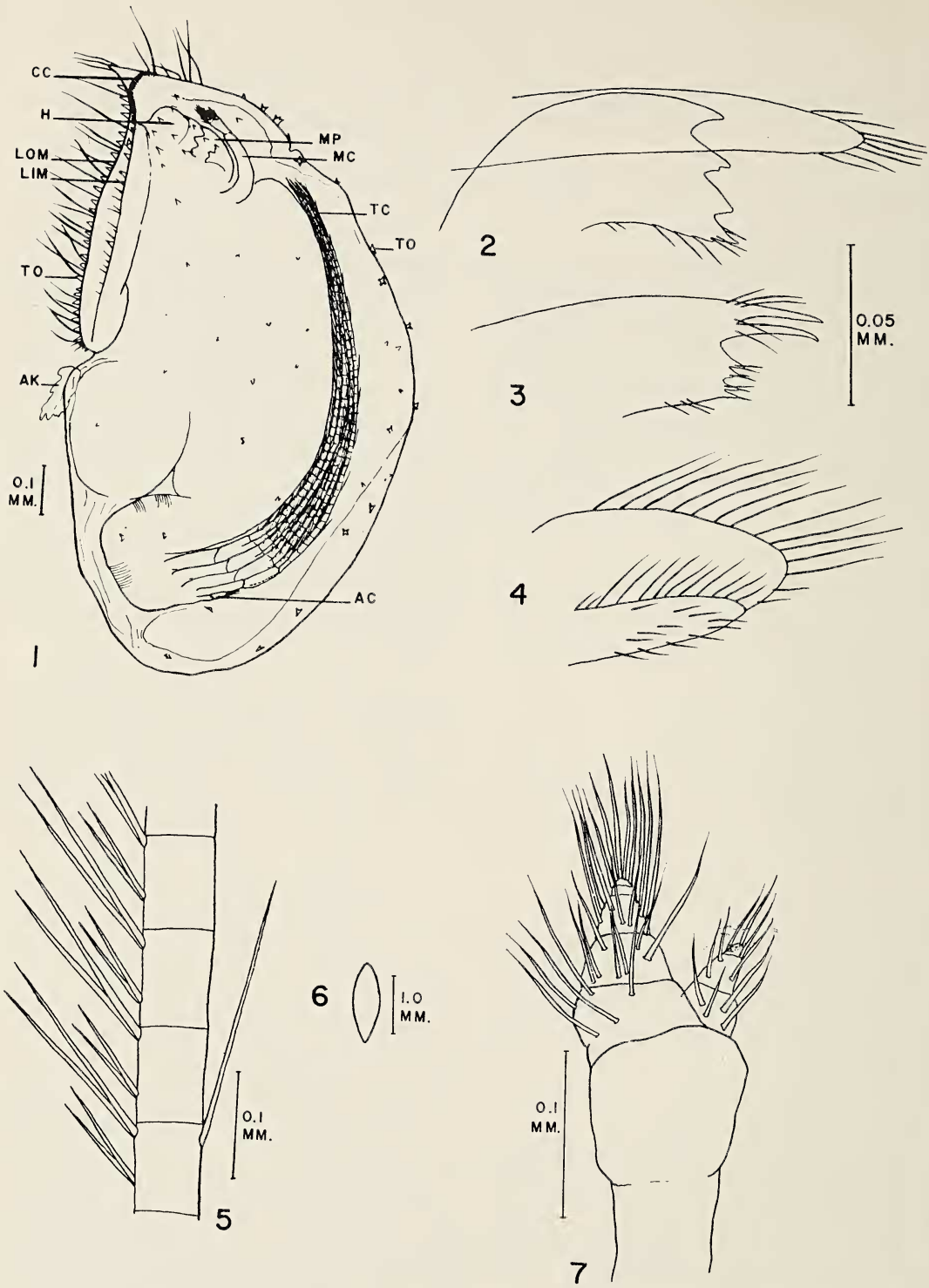

FIGS. 1–7. 1, *Lithoglyptes hirsutus,* n. sp., female, side view of adult removed from burrow; abbreviations: *AC,* anal cirrus; *AK,* attachment knob; *CC,* comb collar; *H,* head; *LIM,* lip of mantle aperture, inner margin; *LOM,* lip, outer margin; *MC,* mouth cirrus; *MP,* mouth parts; *TC,* terminal cirri; *TO,* tooth.

2–4, Mouth parts of *Lithoglyptes hirsutus,* n. sp., female; *2,* mandible with palp; *3,* first maxilla; *4,* second maxilla.

5–7, *Lithoglyptes hirsutus,* n. sp., female; *5,* middle portion of fourth (last) terminal cirrus, side view; *6,* burrow in coral, surface view; *7,* mouth cirrus, slightly foreshortened in comparison with some specimens.

The mouth parts (Figs. 2-4) are typical for the genus, being composed of a pair of mandibles with palps and two pairs of maxillae. Each mandible has four strong teeth, the inner one bearing short bristles. The mandibular palp exceeds the mandible in length; with long, soft bristles on the edges near the tapering point. Each first maxilla is armed with two strong teeth, numerous bristles, short teeth along the cutting edge, and has the usual apodeme. The second pair of maxillae are large and soft, and have numerous flexible bristles distributed along their edges. These close-set appendages serve as posterior limits to the mouth field.

The mouth cirri (Fig. 7) have a two-jointed pedicle upon which the two bristle-bearing rami articulate. They arise below the mouth parts but terminate above them, frequently curving outward at the tips. The anterior ramus has five segments and the posterior ramus has three segments. The segments of the rami are equipped with numerous bristles, which make the determination of the number of segments very difficult.

There are four pairs of biramous, multisegmented terminal cirri, on two-segmented pedicles. The slanted articulation between these pedicular segments is characteristic of the genus. The rami are armed with single long setae on the outer edges of every second to sixth articulation. The setae on the inner edge of the terminal cirri alternate between pairs of long setae at the articulation and pairs of shorter setae toward the middle of the segment (Fig. 5).

A pair of two-jointed uniramous caudal appendages occurs at the posterior end of the body. The total length of the caudal appendage is about ½ the length of the pedicle of the posterior terminal cirrus.

The burrow of the female appears in the surface view as a pointed oval (Fig. 6). It is deeper than it is long. The walls are nearly perpendicular to the surface, and rounded at the bottom. The depth of the burrow appears to be slightly more than the greatest diameter of the animal in dried specimens. It is assumed that the living animal closes the burrow opening with the hardened, hairy apertural area of the mantle.

MALE: Dwarf males resembling cyprid larvae were seen, but being dried they were much distorted, and whether or not they were truly mature stages could not be determined. Of the 11 males studied, none had the very reduced baglike shape of many acrothoracican males, nor the attenuated stalk of the male of *Lithoglyptes spinatus*. They were of a size and shape one would expect of a cyprid larva which had lost its bivalved carapace. The presence of a penis could not be ascertained.

L. hirsutus is the first member of the genus to be found in the central Pacific. Of the other species in the genus *L. indicus* Aurivillius, *L. ampulla* Aur., and *L. bicornis* Aur. are from the Java Sea and Indian Ocean, and *L. spinatus* Tomlinson and Newman is from Jamaica.

L. hirsutus can be distinguished from *L. bicornis, L. ampulla,* and *L. spinatus* by the absence of the apertural hooks and/or spines borne by the latter three species. This new species may be distinguished from *L. indicus,* which also lacks the hooks and spines, by the presence of the "hairs" on the mantle aperture and by its small size (2 × 1 mm rather than 6 × 4 mm).

REFERENCES

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